REVIEW OF EVALUATION OF THE IMPACT OF DREDGING AND CAD CELL DISPOSAL ON AIR QUALITY, NEW BEDFORD HARBOR SUPERFUND SITE, NEW BEDFORD, MA

General Comments

A report on application of a numerical model should have sufficient description and information to reflect a correct use of the model. A reader of the report should not have to go to the model references to get basic information needed to verify the correct application of the model. For example, the report should have the following sections:

Model framework (Options Used)
Source characterization
Meteorological data
Topographical data
Model parameters
Model assumptions
Model Results

Although this report has a CD with input and output information, it should have more text and sections on the above subjects. This report describes the modeling effort very briefly and needs to be expanded. The report emphasizes mainly the sources of emission and meteorological data. The descriptions of emission rate calculations are incomplete and the assumptions are not documented.

As an example, the area of the barge is not given and neither is the area or quantity of sediment resuspension. The concentrations of contaminant and TSS in the water column and barge water are not given. The concentration in the water column at the CAD cell is not given nor does it use the CAD modeling predictions. The same emission rate is used for the barge area and the resuspension area. These rates should not be the same since the barge is emitting PCBs directly from exposed dewatering sediment while the emissions from the resuspension area are from dissolved PCBs that are partitioning from the low concentrations of TSS suspended in the water that is not at equilibrium. The equations and calculations for the emission rates should be documented in the report. The report's documentation is limited to say that it used the emissions from Thibodeaux (1989), apparently without adjusting to site-specific operations. Thibodeaux has updated his emission equations in 1999, 2001, 2002 and 2008.

Some of the important parameters or terms should be defined for the reader. For example, we should define total annual average and 24 hours maximum concentrations and difference between these and what object we would make from each number. The report provides tables with calculated and measured air concentration data and indicates that there is some type of agreement between measured and calculated data. The differences between measured and calculated values should be quantified by a simple error formulation and calculations. June 2009 copy of the report has a section on the site monitoring effort, which is missing or part of it has been incorporated into the new report. The site air and other monitoring effort should be

separated from the air modeling section and has its own section as given in June2009 copy of the report.

Specific Comments And Suggestions

1) These scenarios are different than assumed in CAD cell modeling. MU 25-33 in 1st year and MU 34-37 in 2nd year. MU 1-24 would go in upper harbor CAD cell.
2) Why isn't AERMOD used instead of ISC3? It has been the recommended model since 2005.
3) Did you use long-term ISCLT3 or short-term ISCST3 model for the background source?
4) Why isn't the harbor water also included as a emission source?
5) The exposed sediment in the barge would consist of draining and drying exposed sediments and pooled water laden with suspended PCB-contaminated sediment.
6) It is unclear what is meant by "the dredging hour".
7) Why is 12 hours used for an area? Why is the dredging represented by an hour? What are the dredging operation assumptions? 1000 cubic yards per day? 90 second dredging cycle times? 3-cy bucket? 500-cy barge? Two barges per day? Why not use a daily area? None of the operation conditions are defined or justified. What is the velocity at the site? What are the areas associated with each emission rate? The filling time of a barge is about 5 hours so why is a 2-hour emission time used? What is the dredging area—an MU, a daily dredge area, a 2-hour dredge area?
8) A 5000-cy barge is too large (requires too much draft) for the water depth in the harbor.
9) PCBs will build up in the CAD cell water and reach the pore water concentration. This concentration will exist for months. The modeling assumes a much shorter duration of exposure.
10) Is the water concentration assumed to be in equilibrium with the sediment or is it being assumed that there is a diffusive flux from the sediment to the water column? The source description needs to be more thoroughly described.
11) Detailed descriptions of all of the emission factor calculations should be presented, including the MUs.